



**The Prevention of Disease
by Correct Feeding**

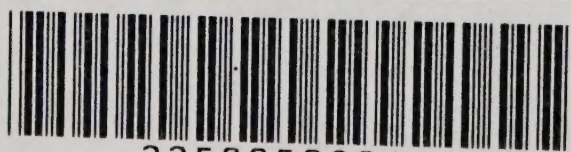
by

M. O. BIRCHER-BENNER, M.D.

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Prevention of Disease by Correct Feeding

BY

M. O. BIRCHER-BENNER, M.D., Zürich.

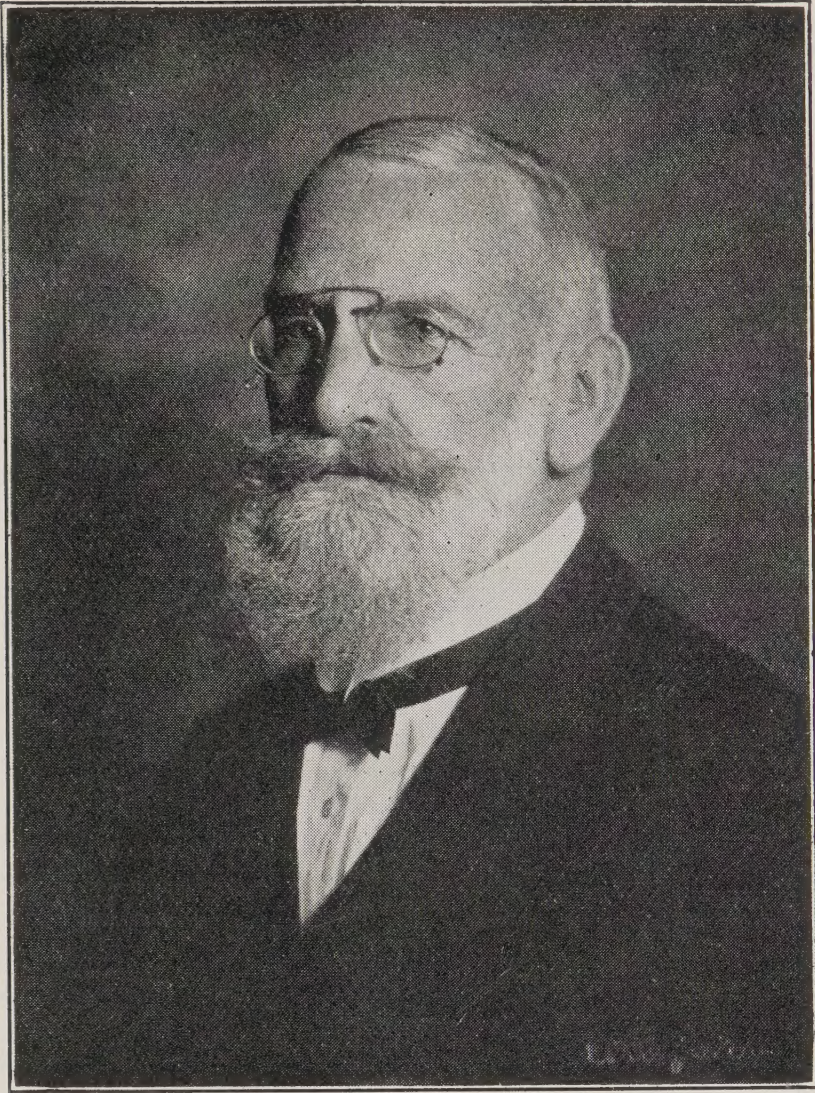
*An Address delivered to the Food Education Society,
Twenty-First Annual Conference of Educational Associations,
University College, London, 6th January, 1933.*

WITH PORTRAIT AND 24 ILLUSTRATIONS.

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M. O. BIRCHER-BENNER, M.D.

Some idea of the widespread interest which the work and conclusions of Dr. Bircher-Benner have aroused may be inferred from the following :—

An "Institut Medical," entitled "Les Forces Vives," has been founded in Paris to carry out his teaching. One of his sons, Dr. Bircher-Rey, lately addressed at the Sorbonne the "groupe d'études philosophiques et scientifiques pour l'examen des tendances nouvelles" upon "The Rôle of Nutrition in the Prevention and Treatment of Disease."

In Germany, several clinics are working on Dr. Bircher-Benner's lines. He recently spoke to 400 doctors at Hamburg, and likewise to the medical men, dental surgeons and educationists of Vienna. One who was present describes his reception as "remarkable." Lectures have been given by him at München and Strasburg.

Signor Mussolini has sent an eminent physician to study his methods. His works have been translated into French, Italian, Russian, Danish, Swedish Dutch, Polish, and two small books into English.

The remarkable enthusiasm displayed during Dr. Bircher-Benner's visit to this country renders it probable that there will be an irresistible call for the issue by a medical publisher of his principal writings.

*An Address delivered to the Food Education Society,
Twenty-First Annual Conference of Educational Associations,
University College, London, 6th January, 1933.*

CHAIRMAN : G. E. FRIEND, M.A., OXON., M.R.C.S., L.R.C.P.,
*Medical Officer, Christ's Hospital ;
President, Medical Officers of Schools' Association ;
Honorary Dietician, Besford Court Catholic Mental Hospital.*

The Chairman: It is a compliment to the Food Education Society that Dr. Bircher-Benner has honoured us by accepting its invitation to come to England to read his paper at this Conference, on the occasion of its Twenty-first Birthday—which coincides with the Twenty-fifth Anniversary of your Society. We are fortunate, also, in being the agents to introduce Dr. Bircher-Benner in person to an English audience, and would assure him that, although the invitation may be tardy, it is none the less sincere. The work of our distinguished guest is more widely known on the Continent. I understand that in Italy, Signor Mussolini is giving practical effect to his precepts.

THE Prevention of Disease by Correct Feeding

AFTER a century of astounding progress in science and technology, in hygiene and medical surgery, the civilised world finds itself almost unexpectedly faced with threatened bankruptcy in every department of life. Each year the distress increases and the future looms dark. People are already speaking of the collapse of the Western world.

Whence this distress? What are its causes? Many answers are given. Some ascribe it to the World War, others to world economics, others again to materialism. No doubt each and all have contributed to bring about the present state of affairs. But were they not themselves the consequences of deeper causes? What power plunged the world into the terrible War? What urge impelled man to over-production? What clouding of the mind created materialism? We understand now: there was an obvious lack of wise forethought. Why? Who dares to answer this question?

Nevertheless, to me as a medical man, it seems clear that one cause of great significance has remained too much in the background. As Nietzsche once said: "*Everything begins in physiology.*" The same century that witnessed such splendid progress, made the fertile soil of the civilised nations radically worse. Prosperity, increased pretensions and scientific aberrations have in many ways greatly augmented the consumption of meat per head of the population; bacteriology has banned raw food and created canning; the consumption of refined sugar has risen to unprecedented heights; provisions made of whole cereals have to a large extent been replaced by those made of white flour; tea, coffee, cocoa and chocolate have become universally popular as a daily indulgence. These changes in the combination of foods led to new needs, and new habits and customs of nutrition were generally adopted. Stimulation and intoxication, instead of nourishment, ruled the palate to an hitherto unknown degree. People thought they were nourishing themselves better by eating large quantities, or by eating many different kinds of foods, by "snacks" and "in between" meals of a sweet or stimulating nature. For many sections of society the consumption of alcoholic drinks became habitual. Artificial colouring, metallic and chemical preservatives, were added to food. Cooking salt was refined and made to cover all kinds of deficiencies in the food. The very ground on which food was grown was poisoned by the use of artificial manures. Milking cows were fed on whatever fodder produced the greatest quantity of milk at the lowest cost, thereby diminishing the dietetic properties of the milk. Customs previously confined to hotel cookery spread to domestic cooking.

Misled by chemical theories of nutrition, the medical world realised so little the disadvantages of these changes that no impressive or successful protest was raised, at least, officially. Hospital cookery

followed the general deterioration without resistance. To some extent the diet of the sick-room accentuated the errors, by rigorously excluding everything raw, by prescribing overcooked food for diseases of the intestines and stomach, and an albumen-fat diet for diabetes. Such things only strengthened even the more thoughtful of the laity in the belief that the prevailing malnutrition was correct. To a great extent the ideas thus formed, practically dominate the civilised world to-day, and according to them the diet is good and correct. Deep-rooted ideas, habits and customs, exercise tremendous power over mankind. Lamentable indeed is it when these are inimical to life. The whole danger was only recognised beforehand by one very great observer. As early as 1881, Nietzsche wrote as follows :

“ *Against bad diet.*—Consider the meals which people take nowadays in hotels and everywhere in well-to-do society. Even when eminent men of learning meet together, the same custom heaps their table as the table of the banker, according to the law of ‘much-too-much’ and ‘of many kinds,’ with the result that the dishes are prepared with a view to their effectiveness and not to their actual effect and stimulating beverages are needed to dispel the heaviness of brain and stomach. Think what brutality and hypersensitiveness must be the universal consequences ! Imagine what dreams they must have ! What sort of art and literature will be the dessert of such meals, and whatever they may do, pepper, ill-temper or weariness of the world will reign in their conduct ! ”

Undoubtedly Nietzsche was right : the pernicious influence of this deterioration of the very basis of life affected man psychically also. In the depths of his soul his desire for life was intermingled with a note of organic fear, waxing ever stronger. But when people are driven by fear they strive for safeguards, for power and weapons with which to overcome the supposed enemy. Thus both body and soul suffered from malnutrition and attendant illness. The conceited and self-complacent nineteenth century, however, did not wish either to hear or see. Ensnared altogether by the delusion that its nutrition was good and healthy, and even an evidence of progress, it turned a deaf ear to all objections. Valuable research, such as that of Alexander Haig in England, and Heinrich Lahmann in Germany, was unfavourably received. Even Eijkman’s discovery that the silvery membrane of each grain of rice contains a nutritive factor which prevents the disease of beri-beri, as well as curing it—even this was received with scorn and mockery. Weightier blows were needed to shatter and dethrone the great delusion, and these followed at the beginning of the twentieth century. This is not the place, and it would certainly be superfluous to indicate the growth and the revolutionary results of the new era of dietetic research. The famous Wisconsin experiment, which began in 1906, taught research that the chemical theory of nutrition ignored the dietetic qualities of the several foodstuffs, which after all is the chief point, and also did not show why the organism remained healthy with one kind of feeding and with others suffered seriously in health, and became ill

through difficulties of propagation. It was then realised that the problem of nutrition demanded a completely new working out. Thereupon, far-reaching research began, such as had never before been known in the history of medicine, so that McCollum said : " Where before there was one worker now there are thousands." Step by step science laid bare the many gaps in what till then had passed for knowledge. Not alone was an entirely new complexion given to such problems as those of protein and mineral elements, not alone were unknown factors discovered which we now call vitamins, but also the previously unknown fact that changes in the quality of food stuffs alter their effect upon the body and prejudice health, even though these changes often be slight and insignificant. This prepared the way for a multitude of new ideas in a previously impenetrable territory—the causation of disease. Problems of ætiology were now solved which had hitherto resisted every attack.

CAUSATION OF DISEASE THROUGH MALNUTRITION.

To a far greater extent than is usually supposed, illness is caused by erroneous feeding. The number of possible errors in diet is very large; manifold, too, are the ways in which they may be combined. Equally manifold are the forms of disease resulting from these errors. The effects of faulty nutrition are like insidious poison. Only after a very long phase of incubation—usually regarded as " health "—does the illness begin. The phase of incubation is indicated by many kinds of defective health, for instance, by constipation, dental caries, paradontosis, pyorrhœa, eczema, disturbances of the circulation, seborrhœa, falling out of the hair, fatigue, etc., all phenomena which have been too little regarded as symptoms of general disease. Seeing that malnutrition lessens the power of resistance to infection, which we call immunity, the disposition to catch cold also belongs to the prodromata (signs or symptoms preceding the outbreak of a disease) of the period of incubation. The disfunctions of the internal secretory glands, as well as pathological changes in them such as goitre, should also in part be reckoned among the prodromata, whilst the more severe forms belong already to the definite diseases of nutrition.

Here let me acknowledge, with deep gratitude, the memorable work of English investigators, among whom I can name but a few : Alexander Haig, McCarrison, Mellanby ; their discoveries connect with those of American research, of which McCollum is the most distinguished representative. Their work was a revelation, and afforded me abundant corroborations of my own observations of disease.

The phase of incubation in diseases of malnutrition teaches us that there are two kinds of health, true health, such as one rarely sees

nowadays, and the appearance of health, the phase of incubation in malnutrition, which I would like to call "pregnant ill health." According to present-day knowledge, the injuries caused by malnutrition extend to propagation and to succeeding generations.

Dysmenorrhœa, inadequate lactation, miscarriage and sterility due to alimentary causes are far commoner than is generally supposed. The second generation evinces an increased sensitiveness to the injurious effects of faulty nutrition, and quite frequently evidences of physical inferiority are shown, including rickets, irregularities of growth and the like. The idea of pregnant ill health is further accentuated by this inborn alimentary deterioration of constitution. Given the same errors of diet, this inborn constitution and alimentary defects shorten the period of incubation, and hasten the appearance of the prodromal symptoms. We may also observe that the injuriously-affected descendants evince a tendency to accentuate the faulty dietetic habits of their forebears.

During the period of incubation—which, as already stated, may last for decades—various kinds of peculiar processes are consummated internally in the organism, of which at least a part may be controlled through scientific methods of examination. Among them are :—

1. Shifting the equilibrium of acids and alkalis towards the acid side—as a consequence of this the organism's power of oxidation gradually decreases, which again is probably the cause of an excessive formation of oxalic acid and ultimately of other far more disastrous damage.

2. The abnormal deposit of fat in the connective tissues.

3. The retention of deposit of urates in the tissues.

4. The accumulation of cooking salt in the tissues.

5. The insidious injury to the capillary net, which can be verified by means of the capillary microscope as discovered by Otfried Müller, Tübingen.

6. The shifting of blood viscosity either above or below the normal, measurable by means of the viscosimeter of Hess, Zürich.

7. Increase of blood pressure.

This list does not pretend to be complete, but lays stress upon hidden processes which are often too little regarded in their connections with malnutrition. Thus the origin of the organism's allergic reactions, which has not yet been investigated sufficiently, is not included in the list, although, I believe, that it belongs there.

A German proverb says : "The jug goes to the well until it breaks." Injurious feeding is ultimately revealed by the characteristic forms of the diseases of nutrition.

To-day the principal food diseases are : the avitaminoses, diseases due to lack of a vitamin and hypovitaminoses, among them xerophthalmia (drying up of the eye), beri-beri, scurvy and rickets. If their subsidiary forms—the hypovitaminoses are included, it will be seen that they are almost universally diffused. That problem is,

however, nowadays, so well-known that there is no need for me to enter into details. The connection with nutrition is clear. It is common knowledge that the manufacture of food stuffs and the usual way in which foods are prepared for table, deprive human nutrition to a great extent of salts and vitamins, so that a large section of the population has become deficient in both. The inadequate supply of salts and vitamins, together with its manifold consequences, runs like a keynote through all other forms of diseases of nutrition.

Contributory causes of the other diseases of nutrition, either singly or in combination, are these : lack of vitamins, disturbed equilibrium of vitamins and of minerals, retention of metabolic products, excess of albumen, food toxins, auto-intoxication, excess of acid, excess of uric acid, biological abnormalities of the regionary capillary net where all these causes act in combined interplay. These, too, cannot be fully indicated here nor duly explained. The latter deficiency is the greater handicap to my explanation, because insight into their alimentary nature has not yet become common knowledge among the medical profession.

Diseases of the Digestive Organs.—Dental disease in its three forms : Caries, paradontosis, deterioration of the jaw (mal-occlusion). Chronic catarrh of the stomach and hyperchlorhydria and its opposite achylia. Intestinal and duodenal ulcer. Colitis. Habitual constipation. Appendicitis. Hæmorrhoids and eczema of the anus. Disease of the stomach and intestine. Flatulence. Diseases of the liver and pancreatic gland.

Diseases of the Circulation.—Degeneration of the heart muscles, angina pectoris. High blood pressure. The vasomotor neuroses or angioneuroses, especially Raynaud's disease. Arteriosclerosis.

Urinary Diseases.—The majority of genuine chronic kidney diseases. Coli-pyelitis. Stone in the kidney.

Skin Diseases.—Seborrhœic eczema, many forms of chronic eczema, prurigo, psoriasis.

Internal Secretory Glands.—Goitre, Graves-disease. Myædema, disturbances of growth and propagation, injury of the suprarenal gland.

Diseases of Metabolism.—Gout, obesity and diabetes are caused exclusively by malnutrition.

Diseases of the Central Nervous System.—It is becoming more and more probable that malnutrition must be regarded as a contributory cause of schizophrenia, cyclothymy, and the many kinds of sclerosis. Its causal significance in arterio-sclerosis of the brain and in apoplexy is an obvious consequence of the injury inflicted on the vascular system. Malnutrition is responsible for

migraine, Menière's disease and many "nervous" diseases, which are grouped as neurasthenia. It is well known that it also tends to accentuate depression, and even lies at the base of melancholia.

If Bergson's conception that the brain is the receiving organ of spiritual illumination be accepted, that the effect of every poison alters, disturbs, clouds the reception, one is compelled to realise that errors of nutrition colour, too, the life of feeling and of thought. You will recall Nietzsche's words about brutality, hypersensitiveness, dreams, and about the reign of pepper, of contradiction and weariness of the world and the conduct of mankind on a bad diet.

Nothing very definite can be said about the injury to the sympathetic nervous system, of the existence of which there is absolutely no doubt, because the injury only finds expression in the form of derivative disease of organs or systems: for instance, as an angio-neurosis, or as hypotonic (diminished tone) or hypertonic (excessive tension) states of the alimentary canal.

As for the *sense organs*, the alimentary origin of many an iridocyclitis (iritis with cyclitis) is certain, of that of otosclerosis (deafness) extremely probable. Xerophthalmia (the drying-up of the eyes), and keratomalacia (the softening of the horny skin of the eyes), with A.—avitaminosis, are striking examples of the damage done to the eyes by defective nutrition.

As for the *muscular system*, I have been able to discern the alimentary nature of that terrible disease called polymyositis.

As to the bony structure, the immeasurable damage of rickets is well-known. On the other hand, the ætiological connections of nutrition and rheumatism are too little known and regarded. Accordingly, it should be emphatically stated that malnutrition is the fundamental cause of all forms of rheumatic disease, from acute polyarthritis to the most severe case of chronically-deforming arthritis. Only secondary significance must be attributed to infection and to cold catching. Mention should also be made here that osteoporosis (a spongy condition of bone) and osteomalacia, as well as delayed formation of callus in fractures, are all the product of faulty nutrition.

The fact that natural immunity is weakened by malnutrition teaches us the great significance of nutrition in relation to all infectious diseases, "cold catching diseases," angina, sore throat, influenza, tuberculosis.

But the keynote of this monumental superstructure of nutritional diseases is formed by the causal connection of nutrition and tumours, especially malignant tumours, the chief of which is the disease of cancer. The excellent books by Rollo Russell, J. Ellis Barker and Erwin Liek dealing with this tragic theme relieve me of the need for further explanation.

This is a very incomplete review of the army of diseases which are caused by faulty nutrition: an enormous amount of suffering, torment and misfortune for the stricken and their families, and of economic strain on the wage-earner and society generally. The victims of most of these diseases may be counted by millions. Dental disease—itsself

a symptom of defective feeding—alone reaches a dissemination of 95 to 100 per cent. among school children in Switzerland. Chronic rheumatism costs the sick fund of greater Berlin three and a half times more for treatment and care than does tuberculosis. Of people over 50 living in the United Kingdom, five million, or one out of eight, will die of cancer. Dr. Dublin, the American statistician of life insurance, computed the yearly loss of the U.S.A. through avoidable disease to be six milliard dollars. The bad effects on the constitution of such great prevalence of malnutrition among crowds of people in every strata of the population, is obvious. These, then, are precisely the diseases and ills which have continually increased in the course of the nineteenth century and are still increasing. The growth of cancer cannot be disputed in spite of all kinds of statistical tricks, and the same applies to dental disease. People speak of a wave of stone in the kidneys. They might just as well speak of a wave of duodenal ulcer—of a wave of rheumatism, of an inner secretory wave, and so on.

That closes our discussion of the causal connection of nutrition and disease. The deterioration of nutrition during the nineteenth century described early in this lecture is evidenced by the alarming increase in the diseases of nutrition. It is high time that our eyes were opened, that our ears began to hear. *Obviously we are faced by the physiological decay of civilised humanity.*

All these physical ills correspond to mental and psychological distresses and suffering. Countless millions are condemned by the feeding habits of the time to an unsuitable life and thereby the whole of human society suffers. Here again some words of Nietzsche accurately describe the real significance of the situation:—

“For everything which to the individual appears as wasted and a blighted life, his whole burden of discontent, paralysis, disease, irritability, greed, he throws back upon society, and thus a bad and oppressive atmosphere is created, and in the most favourable cases, a thundercloud is formed.” Few people have grasped the situation as clearly as your countryman McCarrison, when he wrote: “There is, indeed, no more important problem before the country at the present moment than the provision for the people of a properly-constituted diet and no more urgent necessity than their instruction in these matters.”

PREVENTION BY CORRECT FEEDING.

The discovery of these causal connections, of which there was no knowledge at the beginning of the century, opens the way to prevention. This consists in the transition from an unhealthy to a healthy nutrition. That is easier said than done. It really is a question of a complete revolution in current conceptions of nutrition, habits of eating and drinking, social customs and the production of articles of food. In what does a healthy and correct diet for man consist? Who shall lead him to it? How can this be brought about?

For two reasons I must refrain from attempting even a superficial description of correct nutrition from the standpoint of the present state of research. The first reason is : In spite of many incontestible results, the writers on the subject all differ from each other. One has worked with excellent experiments upon animals, but having only worked with experiments, he knows too little of the practice of nutrition among human beings. Another has been intensively concerned with the practice of nutrition, and has examined the state of health of various nations and races, together with the particular diet customary among them. His results also are of great value ; but he does not know the processes of human changes in diet. Consciously or unconsciously, a third defends the old theories of nutrition which he learnt decades ago, and endeavours to weaken the new facts. A fourth is afraid of losing his position if he decides in favour of the consequences of the new theory and, therefore, he decides to compromise. A fifth acknowledges that the new theory might be useful in the treatment of certain diseases, but feels that the "traditional" and "well-tried" dietetic customs of the people should not be altered. Many contradictions result from all these reasons, which only detailed consideration could solve. The past struggles against new growth, and this conflict creates a confusion of opinions.

My second reason lies in the enormous mass of individual facts presented through chemical and biological research—all, however, aiming at a material substratum—an abundance which not only requires much time to master, but which also can no longer be collected into an unified whole. Thus, for instance, many writers look at everything from the standpoint of vitamins, although I myself agree with McCarrison when he says : "It is necessary to emphasise that the problems of nutrition must not be viewed from a too 'vitaminic' outlook." For these reasons nothing but a fully-detailed exposition of present day knowledge of nutrition could give a really satisfactory picture of the situation.

In order, however, to give you some line of direction in this matter, I have decided—not without some hesitation, I confess—to indicate as briefly as possible the theory which 35 years ago shed light on the mystery of nutrition, and which enabled me *to find and put together the curative diet for diseases of nutrition*, at least 15 years before the results of new research on this subject were published.

MY THEORY OF NUTRITION.

According to Rubner, 96 per cent. of the calories introduced through nutrition serve to maintain the consumption of energy in the static formation of the body and only 4 per cent. serve the building up. Research into the energies of the processes of nutrition may, therefore, claim a prominent and predominating interest of highest value. But the caloric values do not tell us anything about the type, constitution and quality of the energy contained in the foodstuff. Yet, I said to myself, it is impossible that type, constitution and quality of this

energy should be of no significance ; on the contrary, they must be the decisive element in the effect of food. By intensive study of the theory of energy, I gradually came to realise that nourishing energy must partake of the character of accumulated sunshine stored up in the vegetable kingdom. What this means is shown directly by the anti-rachitic effect of vitamin D. Among the materials of nutrition Windaus discovered ergosterol, which, when exposed to ultra-violet rays of a certain wavelength acquires the action of vitamin D. Therefore, vitamin D is an organic molecule charged with light. If the charging of light be withdrawn the vitamin effect ceases. The new theory of the construction of the atom teaches that when molecules and atoms are charged with light, the electrons withdraw from a course near the nucleus. This change is called transition to a state of stimulation. The distance of the new course from the old one is equivalent to the quantity of light absorbed. At the earliest opportunity these stimulated states tend to relapse into their original condition of indifference, when the electron springs back into its old course and the light quant becomes free. According to this theory, a "living" molecule is an organic molecule that is rich in atoms and which has received such a high charge of light that it "pulsates" inwardly and is outwardly fluorescent.

Gurwitsch, a Russian, has now proved incontrovertably that the living substance does actually fluoresce. Thus, ultra-violet rays are emitted from a raw onion, whilst in one that is cooked they are extinguished.

Lakhovsky, a physicist and bold thinker living in Paris, says in his book, "The Mystery of Life," that living cells contain highly-charged molecules and "combined formations"—he calls them "biomagnomobiles"—which are of the greatest importance to life, and can only be replaced through raw food, especially out of the vegetable kingdom. The exclusion of raw food from human dietary since the bacteriological era has, he thinks, brought about terrible consequences, particularly the increase of cancer. Lakhovsky calls cancer the price which humanity pays for asepis.

The same conclusion with regard to the replacement of used-up living molecules through raw vegetable diet is reached by Ingo-Hackh in San Francisco, whose diagram of a living molecule will be shown at the end of the lecture.

This belated recognition of the charging with light of living molecules introduces a completely new factor into the problem of nutrition. Light is a superior and more finely differentiated energy than heat, and light quants are something quite different from calories. The difference in the heat of combustion of an uncharged or a charged quantity of ergosterol may be so small as to be practically undiscernible. On the other hand the difference in the biological effect is magical. It is the charge of light in ergosterol which prevents rickets, governs the growth of bone, and regulates the calcium-phosphorous relation. Is it not to be expected that the charging with light of all living food molecules should be significant for the

biological effect of food? That, however, is the quintessence of the theory of nutrition which I discovered at the beginning of the century.

By following the laws of the theory of energy and by endeavouring to distinguish the charging with light according to the origin and preparation of the food stuff, I came to the same conclusion, as did McCarrison, the English investigator, 20 years later: namely, that "this value may be reduced by boiling, cooking and pasteurisation; by storage, oxidation and decomposition; by subjecting to heat or to the action of alkalis; by drying, canning or other methods of preservation; and by various manufacturing and refining processes." I also perceived, although I was then a regular meat-eater, that the charging with light must be greatest in the organs of raw edible plants, and least in boiled or roast animal food.

While I cannot here enter further into the consequences and probabilities of this theory of radiation, I must remark that it enabled me to understand the relations of nutrition and health, and thence to deduce the constitution and composition of the *curative diet*.

The problem of energy governs nutrition and assimilation. All material occurrences in the organism are subordinated to it. Chemical research leads us into a boundless dismemberment of isolated details, in which we lose ourselves. On the other hand, research into energetics gives us the supreme line of direction showing the way through the labyrinth.

I arranged the materials of human nutrition into three classes according to their values as light accumulators.

Class I.—Raw plant organs and products, *e.g.*, nuts, oil, honey, milk from healthy and rightly-nourished mothers and cows. Possibly also raw eggs from healthy and rightly-fed hens.

Class II.—Wholemeal bread, rightly-prepared and cooked vegetable food, cooked milk and dairy produce, cooked eggs.

Class III.—All kinds of meat dishes, canned and preserved food, white flour and white flour products, refined sugar, mushrooms, and so forth.

The dietetic therapeutic principle was, therefore, simply as follows: the more severe, the more obstinate, the more constitutional the illness, the more must nutrition belonging to the first class of light accumulators preponderate.

According to this principle, I have treated in my sanatorium during the last 35 years all the diseases of nutrition and prodromal states already enumerated, under exact conditions of chemico-physiological control and medical supervision, with the help of all factors of physical and psychical therapy and diminishing as far as possible the use of drugs. I have thus come to know all the difficulties of the human constitution under a changed dietary and all the critical healing processes of the transition period. I have also, however, seen successful cures which could not have been achieved in any other way.

To give a few examples : in 95 per cent. of cases, the most obstinate chronic constipation disappears within from five days to four weeks. Parodontosis is arrested, many cases of rheumatism are cured. Chronic eczema is healed and, with sufficient perseverance, psoriasis. The disease of high blood pressure is favourably affected to an otherwise unknown degree. Herter's infantilismus (cœliac disease) is completely cured. Better results are attained by this treatment than by any other in cases of heart affections and disturbances of the circulation. Gout, obesity and diabetes are affected in an equally favourable way. Migraine, Graves' disease (exophthalmic goitre), many cases of asthma and hay fever are usually cured entirely. The power of resistance against catarrhal diseases increases. The favourable influence of this diet is also evident in tuberculous diseases. A similar basis underlies the Gerson-Herrmannsdorfer-Sauerbruch diet.

Such healing results may be compared to experiments with animals, in that they verify that the cause of disease is alimentary, lack of light-charged food, the preponderance of light accumulators of the third and second class. But if, through such an extensive correction of nutrition, in many cases with almost mathematical precision, healing is possible, this indicates *that by means of adequate alteration in the same direction, prevention is possible*. Prevention requires a carefully adjusted and sufficient increase in the daily diet of light accumulators of the first class, and a considerable reduction of third class accumulators.

In practice, this means salad or raw fruit at one or all meals daily. I employ the plan of giving fruit at the beginning of every meal. The empty stomach likes and digests the fruit better than when full and—what is most important—the appetite for cooked food is gradually reduced. Once daily, at the principal meal, a dish of various raw vegetables, prepared as hors d'œuvres and always accompanied by salad of some green leaves, is served. Wholemeal bread made by the Steinmetz or equivalent milling process (finely-ground), is preferred. Rightly-prepared, conservatively-cooked vegetables and potatoes, with as little meat as possible are given. Tinned and preserved food are used rarely and only in the absence of fresh. Dishes made with white flour are served with plenty of green vegetables or tomatoes, as in Italy. The consumption of sugar, sweet cakes and pastry is curtailed. Such a diet may readily be enjoyed with a minimum addition of cooking salt and involuntarily reduces the desire for alcohol and harmful condiments.

This diet has a further special advantage in that the abundance of raw foodstuffs stimulates thorough mastication, demands thorough mastication and thorough mastication accomplishes wonders. To bolt food in accordance with old habit, is to court failure. A fundamental principle of this correct nutrition for the restoration of health is that the jaws and teeth again perform the preparatory work of digestion. On the ordinary diet, Horace Fletcher's teaching is usually forgotten : not so on this diet. Moreover, he who pays attention

to the manifestations of the sense of taste, speedily learns not only to choose his food wisely, but also not to eat too much. How to prepare raw diet in view of the defective powers of mastication, so general nowadays, is shown in a small book, "Fruit Dishes and Raw Vegetables."

An additional merit of this diet lies in the fact that it does not produce thirst. The diet itself contains an adequate quantity of water for the organism. Those who live on it drink either very little with meals or nothing at all. By drinks are meant here, water, non-alcoholic fruit or grape-juices and harmless kinds of tea. Liquid will only be taken between meals when thirsty.

A brief word as to the difficulties of introducing correct nutrition of this kind in practice. Some people are open to new ideas, whilst others only pay attention when suffering has begun. Yet everyone wishes for an example. Therefore, I see only one possibility: let the doctors give the example! But for that, the first necessity is that medical students should be trained in dietetics. The layman goes over to the new and unaccustomed diet timidly and with hesitation. Accordingly, his eyes are continually on the doctor. How does the doctor feed himself? Does he carry out his teaching? That is the patient's question. I, myself, follow this diet strictly. Nevertheless, patients in my sanatorium are always trying to find out through nurses and servants whether I do not secretly sin against my own teaching, whether I do not eat meat and drink wine. Until my thirtieth year, I ate meat daily, preferably twice a day, then for a further 26 years twice a week, and for the last 9 years I have taken no meat at all. I have not taken alcohol for forty years. My family also goes my way. That makes a deep impression on my patients.

Those, however, who do pioneer work for correct nutrition most successfully outside among the people are the patients themselves when they return home cured. There they work as effective examples.

When once we have doctors trained in dietetics and clinics classified with correct nutritional treatment, a great blessing will spread from them and illuminate the nations which have gone so far astray in their diet.

THE CHAIRMAN: The paper is of the deepest interest and gives much food for thought. I have not had the opportunity of reading Dr. Bircher-Benner's larger works, but heartily commend to your notice the English translation of his smaller book, "Food Science for All." When citing Nietzsche's indictment of the eating habits of well-to-do society, Dr. Bircher-Benner's exquisite sense of courtesy prevented him from rounding off the quotation which continued, without a break, thus: "The wealthy classes in England stand in need of their Christianity in order to be able to endure their bad digestion and their headaches."*

*Since the remarks of the famous philosopher have their moral still, no apology seems required for appending the rest of the section in "The Dawn of Day." "Finally, to mention not only the disgusting, but also the more

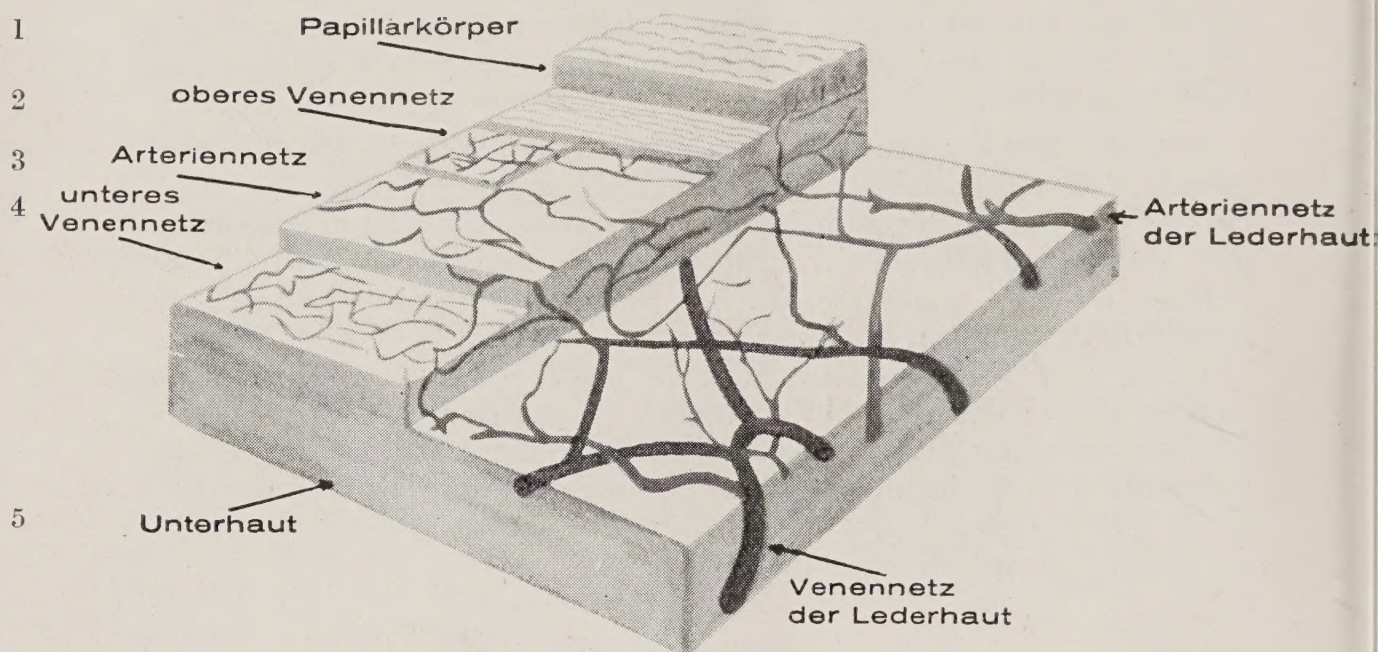
No time remains for questions. Allow me in closing the meeting, to express in your name our warm appreciation of Dr. Bircher-Benner's paper and to ask him to accept our cordial thanks both for his address and for coming so far to deliver it himself. Our thanks are also due to Dr. Ogilvie Gordon for her great help in interpreting the lantern slides.

Note.—Readers are advised to refer to two books by Dr. Bircher-Benner, "Fruit Dishes and Raw Vegetables, post free, 1s. 1d., containing practical instruction in the preparation of a raw and a mixed diet and an established favourite upon the society's stalls; "Food Science for All," post free, 5s. 3d., a series of lectures to teachers. Both may be had from the Food Education Society, 29, Gordon Square, London, W.C.1, which also hopes to publish Dr. Bircher-Benner's Recipe Book. This has been compiled by his sister, Mrs. Brupbacher-Bircher, who has been responsible throughout for the catering at the sanatorium. The doctor himself contributes an important introduction, and "The Pudding Lady" (Miss Florence Petty) a preface. Requests for particulars will be welcome.

pleasant side of the matter, these people are by no means mere gluttons : our century and its spirit of activity has more power over the limbs than the belly. What then is the meaning of these banquets ? They represent. What, in Heaven's name do they represent ? Rank ?—no, money ! There is no rank now ! We are all " individuals," but money now stands for power, glory, pre-eminence, dignity and influence ; money, at the present time, acts as a greater or lesser moral prejudice for a man in proportion to the amount he may possess. Nobody wishes to hide it under a bushel or display it in heaps on a table : hence money must have some representative which can be put on the table—so, behold our banquets !"

The previous section, 202c: "The Care of the Health," contains the following : "The study of the body and of dietary are not yet among the obligatory subjects taught in our primary and secondary schools."

ILLUSTRATIONS.



1. Papillary bodies.
2. Upper venous network.
3. Arterial network.
4. Lower venous network.
5. Deeper layer.
6. Arterial network of the middle layer.
7. Venous network of the middle layer.
8. Capillary loop.
9. Vein.
10. Artery.

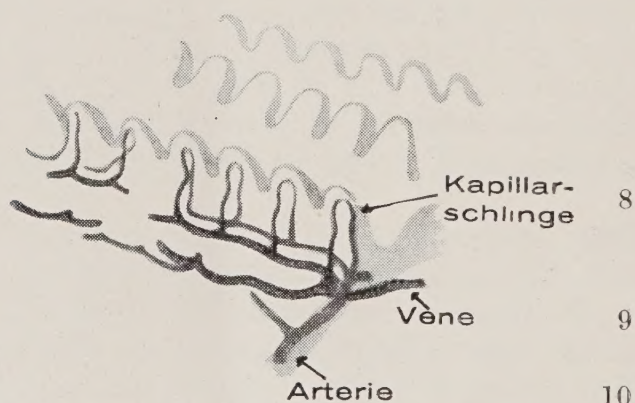


FIG. 1.

Schematic representation of the principal capillary net in the human body. The smallest arteries leading to them ultimately break up into very fine tendrils, which being close together fill the papillary layer under the horny layer. Each single tendril resembles a loop or hairpin. It has an arterial shank leading to it and a venous shank leading away from it, both connected together by the intercalary portion.

These capillary tendrils permeate every organ, every remotest corner of the body. It has been calculated that in the body there are 5 milliard of these tendrils, each half a millimetre long. If put together, a tube 2,500 kilometres long would result, with an inner surface of 80 square metres.

This capillary network, through which the blood-stream flows, distributes the nutritive material in the living tissues and removes the waste material. It forms the system of exchange in the inner working of the body.

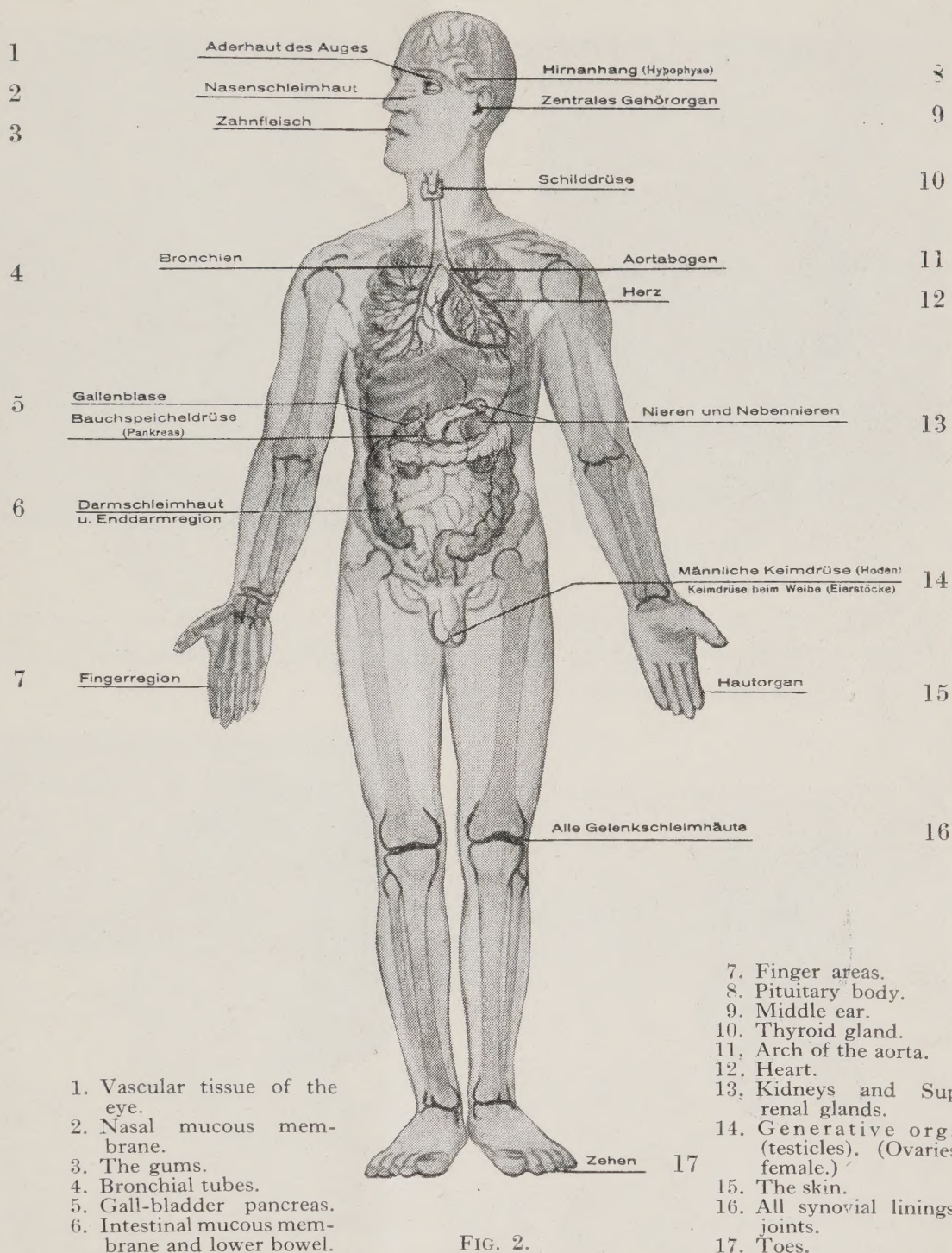
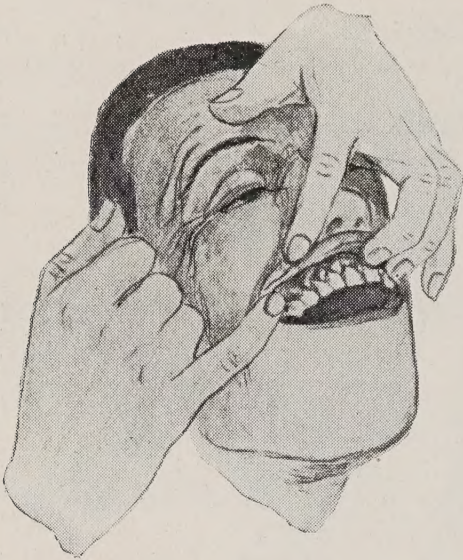


FIG. 2.

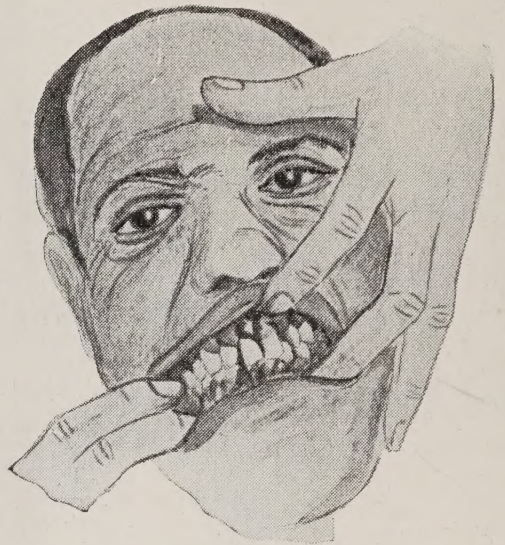
This slide is a very clumsy attempt to indicate the parts and organs of the human body, in which an increased sensitiveness to injury of the capillaries is recognizable. At first, the sensitiveness is general, but varies from man to man in degree and in the particular part affected. Organs of sight and hearing, membranes of the nose or bronchial tubes, the mouth and teeth, different parts of the digestive organs: pylorus, duodenum, appendix, colon and rectum: glands of the digestion: salivary glands, liver, pancreas; organs of excretion: kidneys; inner secretory glands: hypophysic cerebri (pituitary). Generative thyroid, suprarenal glands; organs of the circulation; heart, walls of veins and arteries; joints and cartilage, and finally the skin.

This explains how the same cause (malnutrition) may produce the most different forms of disease in various people, or even consecutively in one person. Thus, for instance, in one person, first Menière's giddiness, then otosclerosis (loss of hearing), another migraine or asthma, in a third colitis, in a fourth nephritis (disease of the kidney), in a fifth chronic eczema, in a sixth rheumatism, etc. Or years of constipation are followed by inflammation of the gall-bladder and degeneration of the mammary glands. Almost without exception all incorrect feeding leads to dental disease, such as caries and paradontosis (retraction of the gums and decalcification of the mandibles). It is also easy to understand the unhealthy change in colour of the skin (complexion) so often seen.

DIETETIC INJURIES TO GUMS AND TEETH.



Inflammation of the gums.



Ulceration of the gums.



Caries (decay of the teeth).



Healthy gums.

FIG. 3.

The most visible and most frequent place of dietetic injury is the teeth; 85 to 100 per cent. of Swiss children of school age are affected by caries. Malocclusion, which is a consequence of rickets, is also said to be demonstrable in 75 per cent. of the children. Modern research has established that not only caries, but also paradontosis is ultimately due to alimentary causes. Altogether, dental disease is one of the standards by which the deterioration in the nutrition of the civilised world may be measured.

The capillaries of the gums are specially sensitive to various types of injury due to food-poisons. The gums show swelling, bleeding and alveolar pyorrhœa; the teeth show tartar and decay.

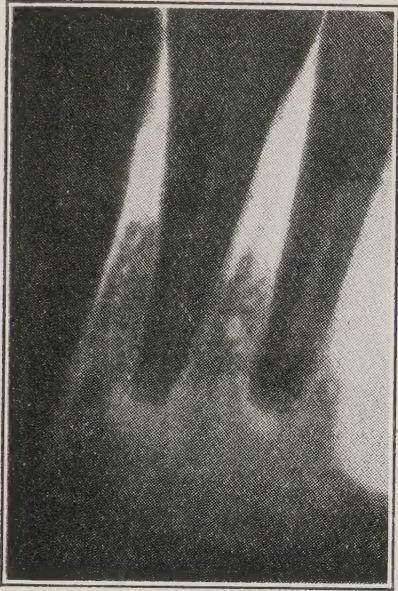


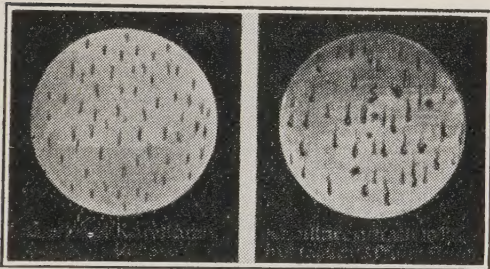
FIG. 4.

Radiograph of paradontosis in an athletically-built man of 32. Notice the zone of decalcification of the jaw round the roots of the teeth.



FIG. 5.

Radiograph of the same case. The paradontosis has been cured by a vegetable diet with much raw food during 9 months. For both figures, I am indebted to Profs. Gottlieb and Weinmann of Vienna.



Healthy capillaries before experiment. Capillaries after 10 days with 3 lbs. meat daily.

FIG. 6.

Microscopic capillary picture from the experiment in nutrition of Professor Gänsslen of Tübingen.

Thanks to the investigations and methods of Professor Otfried Müller of Tübingen, it is now possible to see *in vivo* the capillaries in different parts of the body, without the slightest injury and to observe the circulation of the blood.

Gänsslen allowed two young students to take a diet consisting of 1,500 gr. of meat daily for each, 30 gr. white bread and lemon water for 10 days. The two experimented on liked the diet and felt quite well on it. The first slide shows the healthy hairpin-shaped capillaries at the beginning of the experiment: the second slide shows them at the end of the experiment. You will observe the serious damage done through this diet. Great enlargement of the intercalary portion, formation of aneurisms, burst aneurisms with blood in the tissues. At the conclusion of the experiment, both persons had scurvy-like diseased gums, which bled easily. A strict lacto-vegetable diet of more than a month's duration was needed in order to restore even approximately their normal condition.

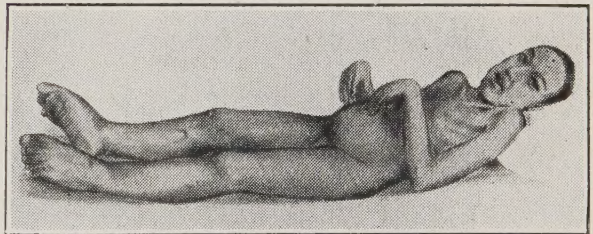


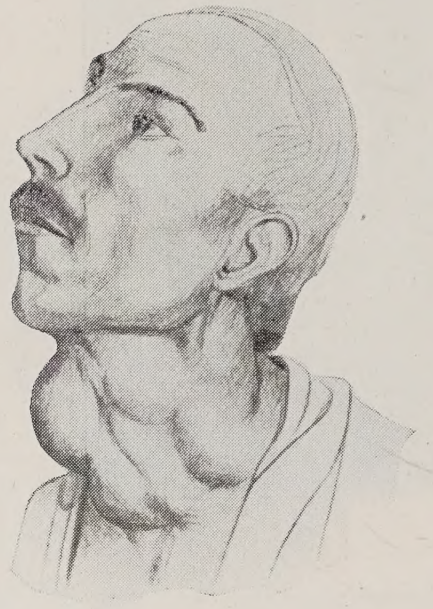
FIG. 7.

This slide shows a true nutritional disease avitaminosis (disease due to lack of a vitamin): the disease of beri-beri which is so widely distributed in the East. The patient is a Japanese. His picture shows us the degree of illness of a South German woman of 57 who had never left her home and came to me for treatment. Although in her diet rice had played quite a minor part, this patient was lying just like the Japanese, with muscles completely paralysed, bladder and rectum paralysed, severe generalised dropsy. The professor at the University Clinic where she lay, had diagnosed the humid form of beri-beri. The prognosis appeared to be unfavourable, the patient was extremely ill, vomited all food given. I advised a curative diet with the highest charging of radiation, raw vegetable food suitably prepared and combined. After two days bladder and intestine began to act. After three months the dropsy had disappeared of itself and the patient began to get up. After eight months, 70 per cent. of the capacity for movement had returned.

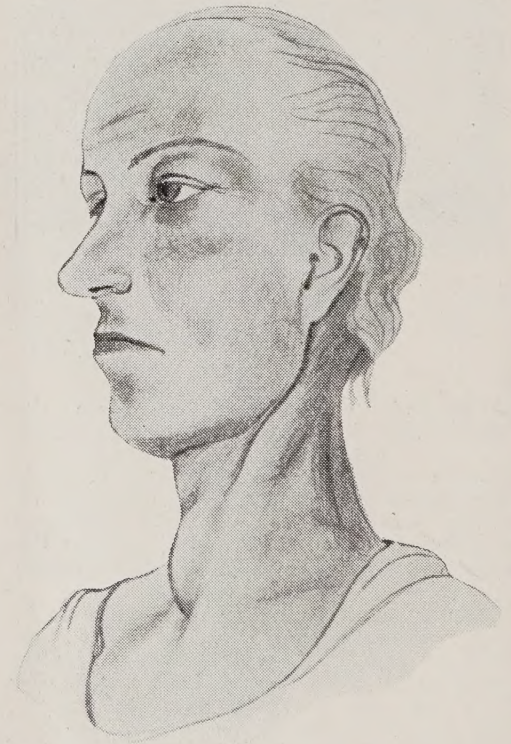
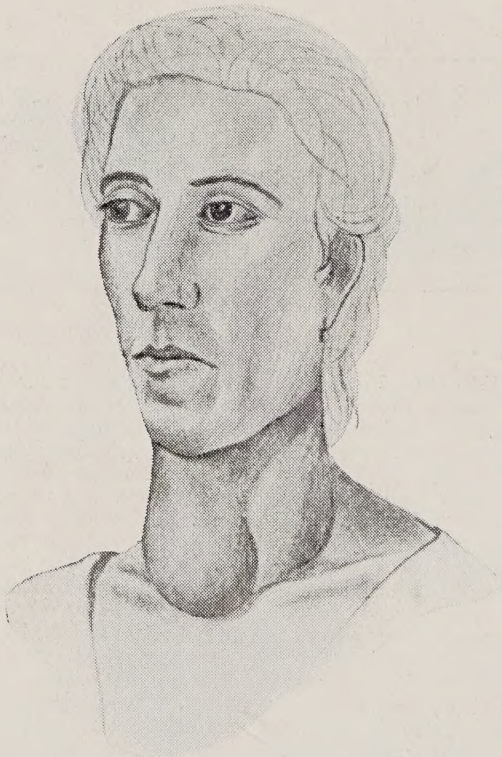
It should be realised that the same injury of the capillaries attacked the entire vascular system, and some of the highly sensitive regions more than others; thus, for example, the gums which are distinguished by particularly long capillaries.



Soft diffuse goitre.



Advanced loculated cystic goitre.



Types of goitre facies.

FIG. 8.

This slide shows various forms and degrees of goitre, a disease of the endocrine glands ; observe the soft diffused goitre and the heavier form of the knoten kropf (goitre knot).

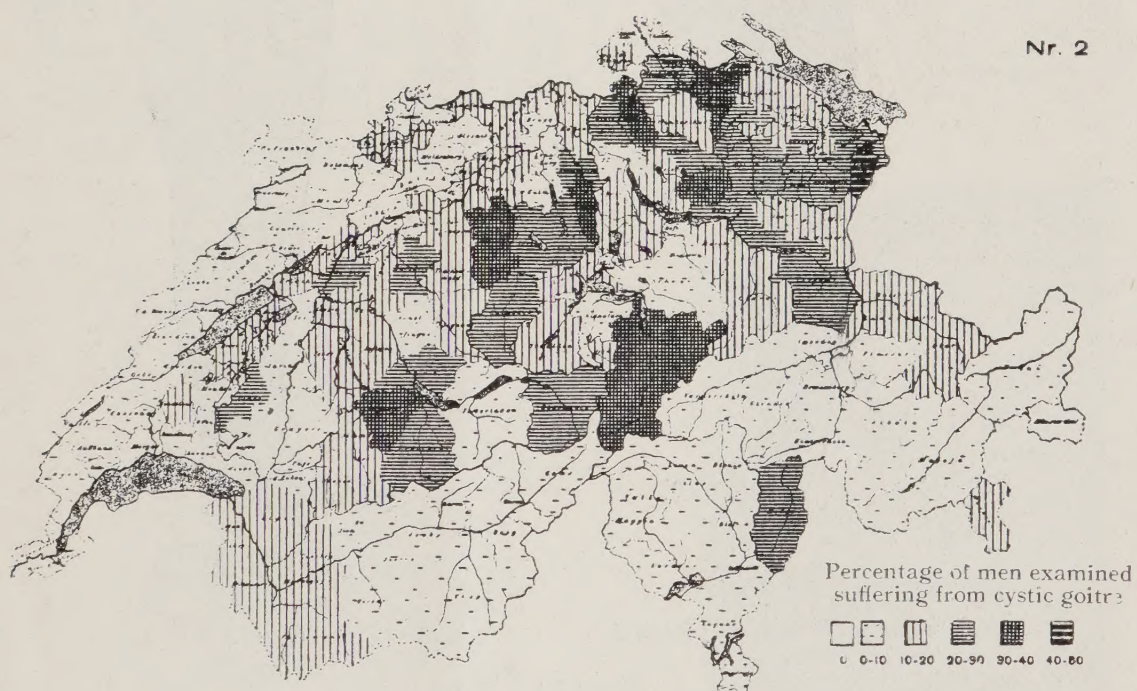
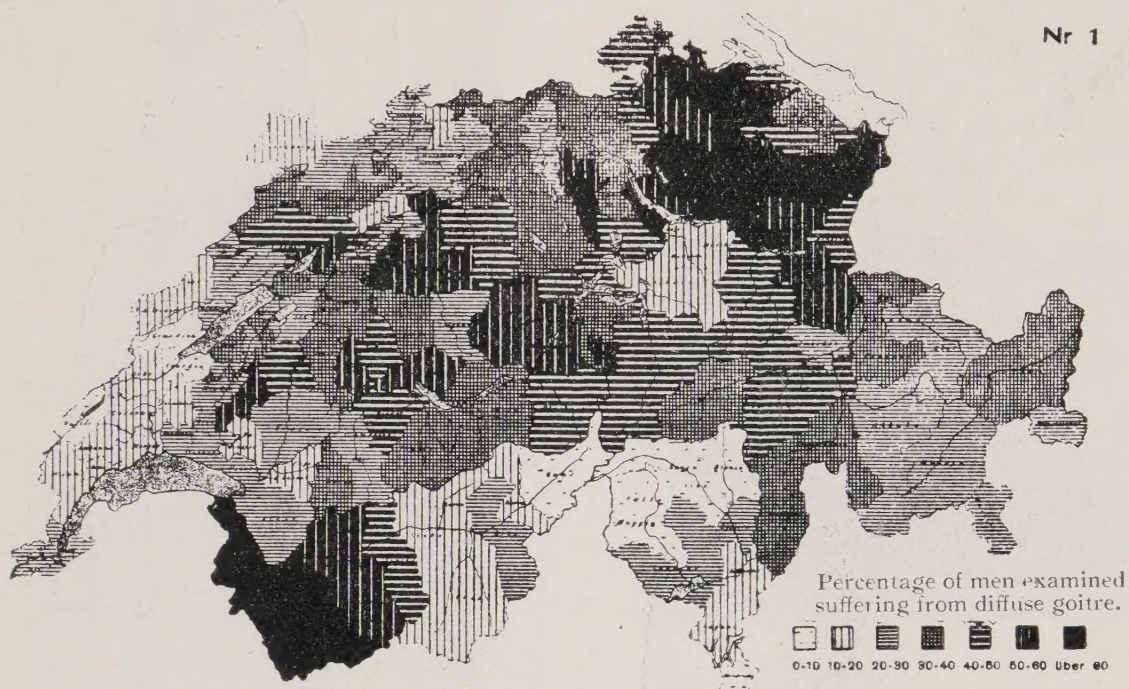
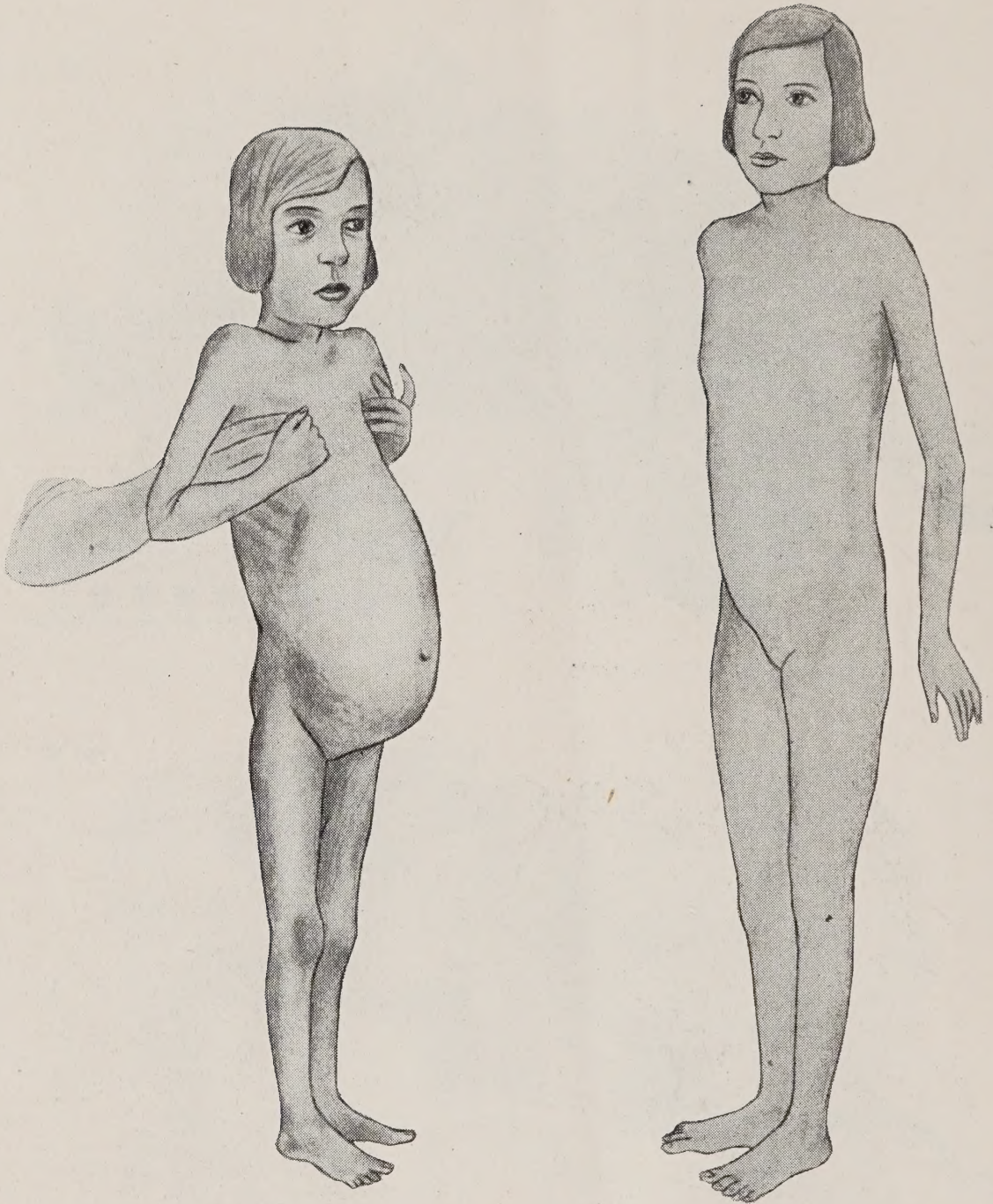


FIG. 9.

The two maps of Switzerland show the geographical distribution of the disease of goitre among the men examined for military service in the year 1924-1925. Above, diffuse goitre, below, knoten kropf (goitre knot). The preponderating incidence in German Switzerland is evident on both maps, but especially on the second. According to Dr. Otto Stiner, an investigator of the Federal Ministry of Health at Berne, the cause of this difference must be sought in the different dietetic customs. Prevention is only possible through a revision of diet.



Lala M.
(Before the beginning of the raw food
treatment.)

Lala M.
(Cured.)

FIG. 10.

This slide introduces a hitherto incurable gastro-intestinal disease. It is one of the most serious diseases of childhood. Herter's infantilismus (viz., cœlic disease). After being treated in a children's clinic for five months, the child appeared as in the picture on the left. Advanced disease, huge stomach, thin and weak. It had been given a most careful diet. Then after eight months of an almost exclusive diet of raw vegetables and fruit, the child was cured, had gained $7\frac{1}{2}$ kilogrammes in weight and 7 centimetres in height. The picture on the right shows the girl two years later.

See "Den intestinalen Infantilismus und ähnliche Formen der chronischen Verdauungsstörung, ihre Behandlung mit Früchten und Gemüse," von Priv-Doz. Dr. G. Fanconi (Chief of the Zurich children's clinic) B. Karger, Berlin, 1928.



FIG. 11.

This slide also deals with injury to the inner secretion glands. It is a case of a girl of 19 with the disease of myœdema, who from her 15th year had also suffered from a troublesome eczema, which refused to yield to treatment. Notice the round expressionless face and the swollen body.

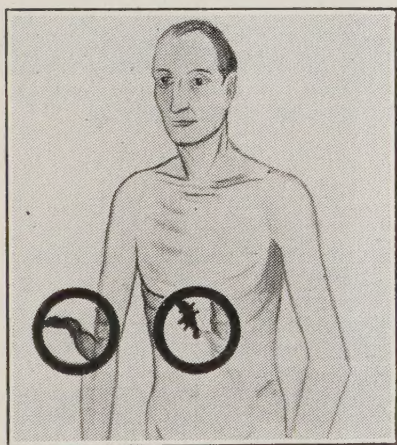


FIG. 13.

This slide, too, deals with the digestive organs, duodenal ulcer. In the two circles radiographs are shown: on the left a normal duodenal intestine, on the right the same section with several ulcers which form niches in the wall of the intestine. A gradually increasing nutritive injury of the whole organism precedes the ulceration, and this provides the soil on which the ulcers may arise through vascular stasis in the intestinal lining. The disease spreads gradually. In some cases the new dietetic treatment relatively easily leads to a cure, but other cases are extraordinarily obstinate and difficult to treat.



FIG. 12.

The same patient in her 24th year. On my advice, she had for eight months lived principally on a diet of raw vegetables and fruit. She has become lively. Her husband says "she is quite a different person." Both the myœdema and chronic eczema are cured.



FIG. 14.

This slide shows the patient who was cured of beri-beri three years later in her sixtieth year. In order to express her joy at having regained freedom of movement, when the picture was taken she took up a dancing position. These two slides give an idea not only of the destructive power of an incorrect diet, but also of the healing power of one that is correct.

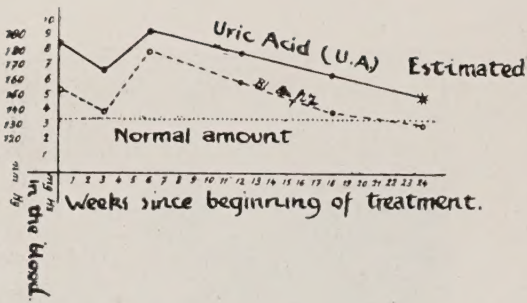


FIG. 15.

The slide shows two curves running parallel: amount of uric acid in the blood and the blood pressure of a man of 60 with severe chronic eczema. He was under observation for 24 weeks. The eczema was completely cured in that time.

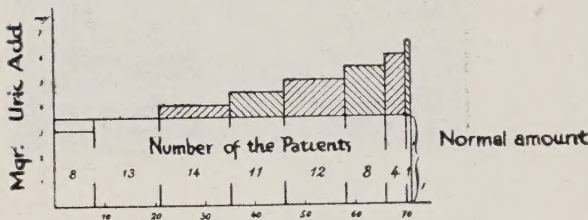


FIG. 17.

Diseases of malnutrition have a long phase of incubation which may even extend over decades. During this time of growth the person considers himself quite well. Retention of uric acid belongs to the hidden processes of the period of incubation. This fact is confirmed by the three following slides. In June, 1930, 71 patients in my Sanatorium had for four days a raw vegetable diet deficient in purins. In the great majority of cases, instead of a lowered proportion of uric acid in the blood, there was a considerable increase.

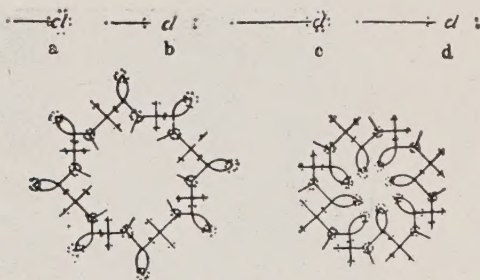


FIG. 18.

These figures are taken from an article by Ingo W. D. Hackh (San Francisco) entitled, "The Electronic Basis of Life." *Pacific Dent. Gaz.* 38, page 817 (1930).

They attempt to portray the chemical nature of living protoplasm as deduced from the conclusions of research. Living protoplasm shows new chemical reactions from minute to minute continually. It is in a *dynamic* state. If reaction ceases, the protoplasm is dead paraplasm.

Light alone can maintain this dynamic condition.

In the upper margin of the slide, the charging with light of the simple H.Cl. molecule is depicted in four phases. The point on the left is the hydrogen atom nucleus, Cl. represents the nucleus of the chlorine atom; the 8 points round Cl. are the 8 valence electrons. The line between the point and Cl. measures the energy which unites the hydrogen with the chlorine. a = is ready for the reception of energy. b = chlorine that has received energy and has passed into a state of stimulation, its radius has become larger, its valence electrons have moved from the nucleus to an outside bow. c = the hydrogen nucleus has received the energy. d = chlorine and hydrogen have received energy. The molecule fluoresces. e and f = representations of a molecule of a polypeptide moving in ring and chain form from 8 amino acids in a stimulated (charged) state. Each atom of carbon in it is a point from which 4 lines issue, every atom of nitrogen is a point from which 3 lines issue; oxygen is in the corner where 2 lines and hydrogen is at the end of each line. The small points are the valence electrons.

In a corresponding fashion, we must imagine the light-charged stimulated states of the complicated molecules of the living substance in protein, carbo-hydrate and fat. The compensation for the energy quants lost through the fluorescence of the protoplasm comes to pass through living food, such as fresh or raw vegetables and fruit, through vitamins and finally through absorption of the energy of light.

FIG. 19.

This microscopic picture of the capillaries is from the lip of a woman of 37. For 20 years she suffered from constipation. For the last few months she had been in a state of depression with high blood pressure and neurasthenia. The picture was taken in May, 1932. Notice how the rather tangled capillaries are snapped off, in form like a knee.

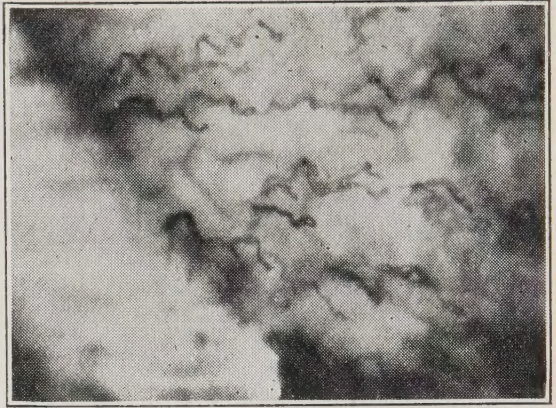
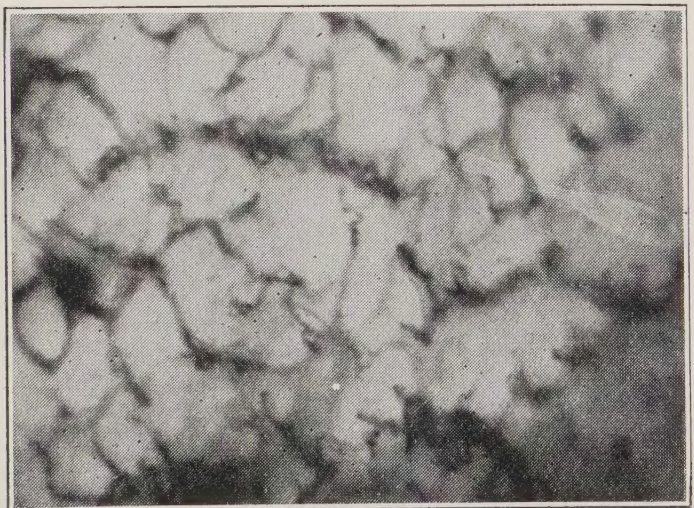


FIG. 20.

The same picture three weeks later, in June, 1932. The capillaries are again stretched. Constipation is cured, depression has gone, thought function is normal.

FIG. 21.

Capillary picture of the lips in a girl of 15 who has diabetes. Next to the few contracted neo-capillaries, notice the enlarged subcapillary plexus. Diabetes is, therefore, not merely a disease of the pancreas.



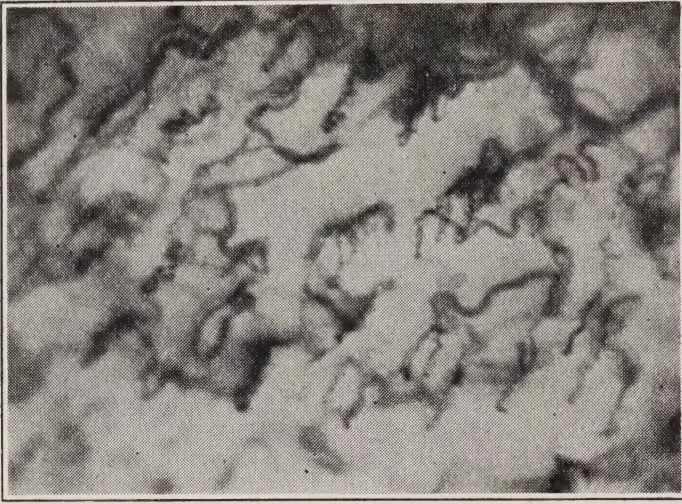


FIG. 22.

Capillary picture of a man of 52, who for 35 years suffered from typical gout. For the last 15 years a chronic ulcer has existed on the left big toe which would never heal. From his 6th to 14th year he suffered from nettle-rash having repeated relapses. Notice the archicapillaries (forms of the capillaries in very young infants) next to the sparse contracted neo-capillaries. Another picture showing serious damage.

On the 5th day of treatment an attack of urticaria occurred, in the 3rd week, an attack of gout. After six weeks the ulcer on the toe closed.

FIG. 23.

Arthritis deformans of the hip joint is a serious malady. This slide shows the state produced by it in a man of 65, who could only walk a few paces with pain, when he began our treatment. The radiograph shows large areas of decay and decalcification in the hip-joint.

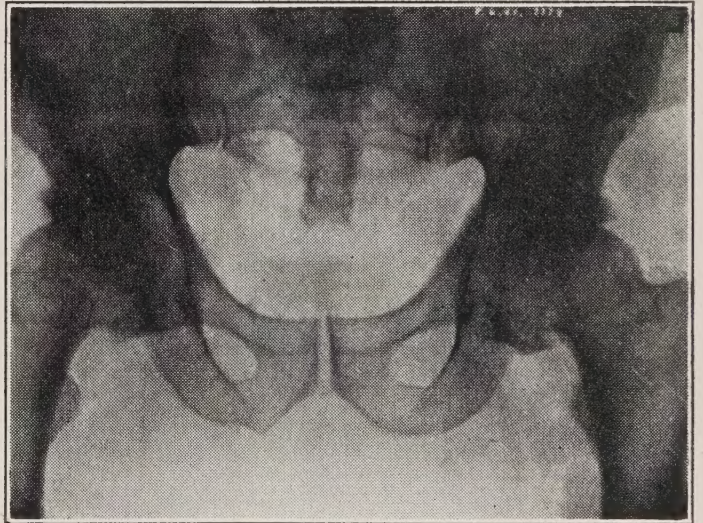


FIG. 24.

A radiograph of the same case a year later, after thorough dietetic treatment. He is now able to walk three hours at a stretch, without pain. The picture shows extensive new deposits of chalk in both the hip-joint and joint-head.

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